State Of California

The Resources Agency of California

Memorandum

Date : May 28, 2002
Telephone: (916) 653-0159

To : Docket

From : California Energy Commission - Marc Pryor
1516 Ninth Street
Sacramento, CA 95814-5512
Project Manager

Subject : **MORRO BAY POWER PLANT PROJECT (00-AFC-12) - AMBIENT AIR TEMPERATURE STUDY**

Attached is staff's study of the number and duration of hours that the air temperature exceeds 84°F near the Morro Bay Power Project. Staff reviewed the meteorological data files from the 1994, 1995 and 1996 used in the ambient air quality modeling for the project. These files were provided in the Application for Certification.

c: Proof of Service (00-AFC-12)

AMBIENT AIR TEMPERATURE STUDY
Morro Bay Power Project

Staff was asked to evaluate the number and duration of hours that the air temperature exceeds 84°F near the Morro Bay Power Project. In performing its study, staff reviewed the meteorological data files for 1994, 1995 and 1996 that were used in the ambient air quality modeling for the project. Per U.S. Environmental Protection Agency (USEPA) and California Air Resources Board (CARB) modeling recommendations and guidelines, meteorological data files are generally modified from their original raw form to meet input requirements. Staff found only a few modifications to ambient temperatures in the files. Therefore, these temperature data files are a reasonable source of data to represent the ambient air temperature conditions at the Morro Bay Power Project site.

For each hour of the year (excluding the 24 hours of February 29 in 1996 – a leap year) a temperature was recorded. Data were sorted by to determine which hours exceeded certain temperatures. As shown in Table 1, the minimum and maximum temperatures for the 3 years were 38.0°F and 92.2°F, respectively. On an average annual basis, almost 99 percent of the hourly measurements are between 40°F and 70°F, which is expected for a coastal location subject to the moderating effect of the ocean. On an average annual basis, 99.5% of the measurements are below 75°F and 99.95% are below 84°F.

TABLE 1: Number of Hours that exceed a given Temperature

Temperature °F	Total Hours Greater Than an Ambient Temperature in Three Years	Average Hours in an Average Year	Percent in an Average Year
Min 38.0			
30	26,280	8,760.0	100.0%
40	26,269	8,756.3	100.0%
50	24,145	8,048.3	91.9%
60	4,111	1,370.3	15.6%
65	1,002	334.0	3.8%
70	351	117.0	1.3%
72	232	77.3	0.9%
75	116	38.7	0.4%
80	30	10.0	0.1%
84	11	3.7	0.04%
90	2	0.7	0.01%
100	0	0.0	0.0%
Max 92.2			

This analysis shows that there were 11 hours that exceeded 84°F from 1994 to 1996. Staff investigated these 11 hours and found that four were single hour events that barely exceeded 84°F, as follows:

Event Date	*Hour*	*Temperature (°F)*
April 30, 1996	11th hour	85.5
June 29, 1996	10th hour	84.4
September 5, 1995	11th hour	85.9
September 15, 1994	10th hour	84.8

Staff found that the remaining seven hours were contained in two events with consecutive measurements above 84°F. Both occurred in October in different years. One was from 10:00 am to 1:00 pm (4 hours), and the other from 12:00 noon to 2:00 pm (3 hours). Each of these days reached temperatures that exceeded 90°F for one hour.

Event Date	*Temperature(°F)*	*Event Date*	*Temperature (°F)*
October 5, 1995		**October 8, 1994**	
10:00 am	85.0	12:00 pm	87.5
11:00 am	87.3	1:00 pm	90.2
12:00 pm	92.2	2:00 pm	85.7
1:00 pm	84.3		

These two events and the single hour events correlate well with the expected average of approximately four hours per year that exceed 84°F, as shown in Table 1. However, temperatures extremes can vary from year to year and three years of data may not have captured all the variability.